

## **UEA Contribution 1 to D9**

### **UK observed changes in extremes 1960-2000**

Malcolm Haylock, UEA – November 2003

#### **Rainfall**

27 stations in SE England and 13 stations in NW England were analysed with the STARDEX diagnostic extremes software to determine changes in extreme rainfall over the period 1960-2000.

The following parameters were used:

rainday threshold = 1mm

base period for calculation of normals = 1961-1990

Minimum no. of raindays for percentile calculation = 10

minimum non-missing data = 80%

In general extreme rainfall in both regions has increased in DJF and decreased in JJA. Changes are stronger in DJF than JJA.

#### ***prec90p: 90<sup>th</sup> percentile of raindays***

Generally this has increased in DJF and decreased in JJA by up to 0.23 mm/yr. In both seasons only 3 stations show a (very weak) trend of the opposite sign. Fig 1 shows the DJF trends.

#### ***641CDD: maximum consecutive dry days***

Generally this has decreased in DJF (up to 0.16 days/yr) and increased in JJA (up to 0.24 days/yr). A coherent region of about 12 stations in the far SE shows an increase in DJF. In JJA, changes are generally stronger in the SE compared to the NW.

#### ***644R5d: maximum 5-day rainfall total***

Consistent with prec90p, 5-day rainfall has generally increased in DJF (up to 1.1 mm/yr) and decreased in JJA (up to 0.75 mm/yr).

#### ***SDII: Simple daily intensity index (rain per rainday)***

In DJF this has increased at all stations except one by up to 0.08 mm. In JJA 33 of the 40 stations show a decrease of up to 0.05 mm.

#### ***691R90T: proportion of total rainfall from events above the 1961-1990 90<sup>th</sup> percentile***

Generally this has increased in DJF and decreased in JJA by up to 0.7 %/yr

#### ***692R90N: no. of events above the 1961-1990 90<sup>th</sup> percentile***

Generally this has increased in DJF (up to 0.14 events/yr) and decreased in JJA (up to 0.08 events/yr).

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## Temperature

The STARDEX diagnostics software was run with 21 temperature stations (from the FIC European data set) over the period 1958-2000. Parameters were set as for rainfall. A strong warming over the period reflects in all the indices.

### ***tmax90p: 90<sup>th</sup> percentile of maximum temperature***

This has increased at all stations in both DJF (up to 0.04 deg/yr) and JJA (up to 0.06 deg/yr).

### ***Tmin10p: 10<sup>th</sup> percentile of minimum temperature***

This has increased at all stations in DJF (up to 0.07 deg/yr) and increased at all stations except 2 in JJA (up to 0.04 deg/yr). One station (Askham Bryan) in JJA shows a strong decrease (-0.03 deg/yr).

### ***125Fd: Frost days***

This has decreased at all stations in DJF (up to 0.5 days/yr). In JJA less than half the stations have cold enough temperatures with very small trends.

### ***144HWDI: Heat wave duration index***

This has increased at all stations in DJF (up to 0.05 days/yr) and increased at all except 2 stations in JJA (up to 0.1 days/yr).

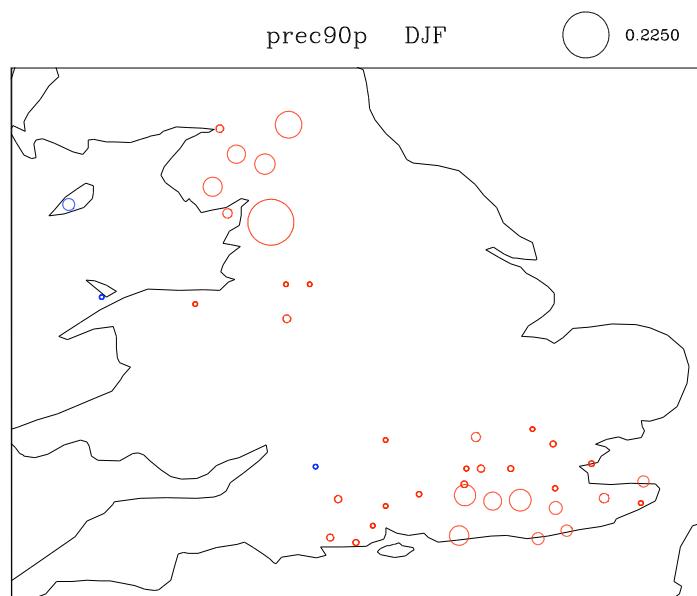


Fig 1: Trends in DJF 90<sup>th</sup> percentile of daily rainfall.

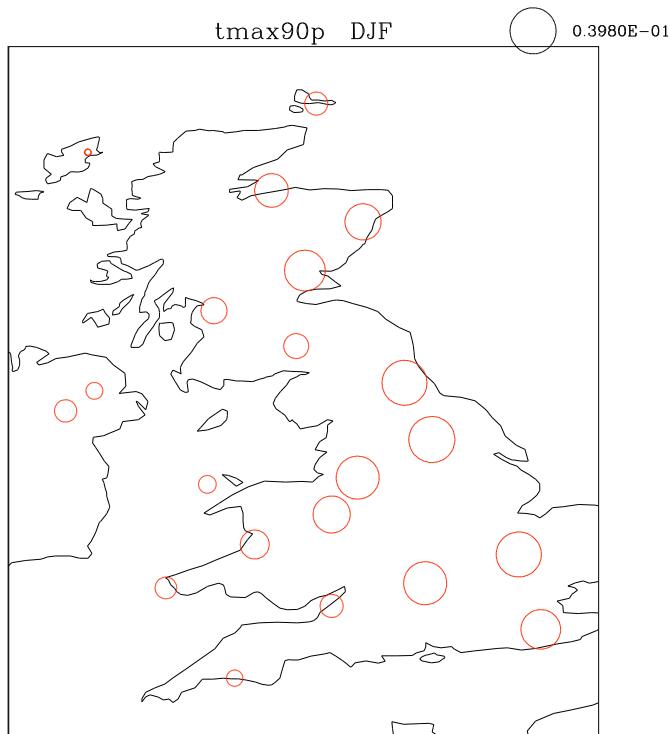


Fig 2: Trends in DJF 90<sup>th</sup> percentile of daily temperature.